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FEEDING IN FLIGHT



BUREAU OF SUPPLIES AND ACCOUNTS
NAVSANDA Publication No. 54
August 1945

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NAVY DEPARTMENT,
BUREAU OF SUPPLIES AND ACCOUNTS,
Washington, D. C., 1 August 1945.

This pamphlet is a supplement to the Navy Cook Book. It is issued as an aid to squadron commanders, air transport officers, squadron transportation officers, supply (commissary) officers, ships' cooks, flight orderlies and any other personnel engaged in the planning, preparation, and service of flight rations.

W. J. CARTER,
Chief of the Bureau of Supplies and Accounts.

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INTRODUCTION

The in-flight feeding program is in its infancy. While the program is growing, some guidance is advisable in order that the efficiency of the flight crews can be maintained. It is the object of this pamphlet to assist in supplying this guidance by providing practical suggestions for well prepared, nutritionally balanced meals.

It is of primary importance that the flight crews eating over 15 percent to 20 percent of their meals in flight should be provided adequate diets while in the air, in order to insure their maximum efficiency and maintain their optimum health. It is equally important that aviation personnel in flight should not be without food for periods greater than 5 to 6 hours. Personnel taking off 2 hours or more after the last meal should be provided a snack meal before taking off. If the flight is expected to extend 3 to 4 hours or more, they should be provided with a meal or snack to be consumed aboard the plane. Hunger may be a contributing factor in the development of "pilot fatigue," which is a general deterioration of efficiency of aviation personnel due to the strains imposed by the operation of aircraft. Pilot fatigue may give rise to lack of stamina, poor muscle coordination and nervousness.

A nutritionally adequate meal for personnel engaged in flying is no different basically than the meals recommended for personnel doing ground work. The same minerals and vitamins vital for protection from infections and for proper control of body processes are needed. The number of calories needed may vary according to the amount of energy expended. It is safe to assume that these men will require from 3,000 to 4,000 calories per day, the same range recommended for men performing most other duties.

While the same essential food factors are required, that is, proteins, fats, carbohydrates, vitamins and minerals, it may be necessary to provide them in more easily digested form than may be served in the general mess. A discussion of necessary food factors is contained in the Navy Cook Book under the subject of "Nutritional Value of Foods".

Rations for in-flight feeding may be issued as hot meals, sandwich meals, or ration components. Some of the factors determining which of these kinds of rations will be ordered are: the type of aircraft, the missions being flown, and the kind and amount of equipment provided for the preparation of meals aboard each ship.

The larger aircraft, which are generally assigned longer missions, are equipped with more airborne

galley gear than the smaller craft. This provides facilities for the service of hot meals. Where only a small amount of galley gear is provided, it is necessary to issue either ration components or sandwich meals.

On the 1, 2, or 3 place planes that do not carry galley equipment, simple ration components such as candy bars or cookies should be available for the men to carry in their pockets. For carrier aviation personnel, snacks should be available near the ready room preliminary to the flight.

The length of the flight will determine the number of meals to be served and is an important factor in the determination of whether hot or cold meals will be issued. Since patrol duty usually lasts from 12 to 20 hours, the men on these missions should be provided 3 hot meals with between-meal snacks for the longer flights. Personnel flying in a training ship may be out only 4 to 5 hours, thus requiring not more than 1 meal in flight. If these men are not taking as many as 15 percent to 20 percent of their meals in flight, a sandwich meal may be quite satisfactory, particularly if supplemented by soup and beverages. In cold weather or cold climates it is always desirable to supplement sandwich meals with hot soups or hot beverages.

The number of men who are flying must be considered in relation to the capacity of the equipment used for holding or packing the food. If a greater number of personnel than customary is flying, it may be necessary to supplement the amount of food that can be carried in a warming unit with thermos bottles of hot soup or beverage or with a box of sandwiches.

The location of the air station also affects the kind of ration issued. At advanced bases, where supplies of fresh provisions are limited or nonexistent, the flight rations will be prepared for the most part from standard dry provisions plus available flight ration items. In using many dry provision items, additional care and skill must be exercised in order to prepare adequate and palatable meals. At shore establishments within the continental limits, menus may be planned using general mess items including fresh provisions and special flight ration items as listed in Supplies and Accounts Memoranda, art. 1320-8, Procurement and Components.

In the interest of maintaining good nutrition and morale, it is important that all personnel concerned with flight feeding acquaint themselves with the problems involved and apply the material in this supplement as an aid for the solution of these problems.

AIRBORNE EQUIPMENT FOR FLIGHT FEEDING

The Navy has in use several kinds of airborne galley equipment for the preparation and/or service of food in flight. In this handbook they have been classed in the following manner:

- Type I Hot plate, grill, and hot cup
- Type II. AG-1 hot chest, Maxson "Whirlwind" oven, and FTG-3 food warmer
- Type III. AG-1 unit, and Helmco unit
- Type IV. Aervoid vacuum food carrier, and thermos jugs or bottles

TYPE I

The first type of equipment draws electric power from the plane's generator or auxiliary generator as the source of heat for the cooking of food.

Hot Plate

A hot plate is an electrically heated metal cooking surface on which a utensil can be placed for the cooking or heating of food. Most hot plates are equipped for 3 rates of heating. For additional information concerning the hot plate see chart, page 11.

How to use.—Preheat hot plate by turning switch to "high" a few minutes before placing pan on it.

Start cooking food with switch turned to "high."

Reduce heat during cooking process to "medium" or "low" in order to slow the cooking of the food, if desired.

How to clean.—Cool hot plate before cleaning.

Scour the plate with cleanser and wipe clean with cloth rinsed in clear water.

Grill

A grill is an electrically heated flat metal surface designed for the grilling or frying of meats and eggs and for grilling sandwiches. Three rates of heating are usually provided on grills as on hot plates. For additional information see chart, page 11.

How to use.—Preheat grill by turning switch to "high" a few minutes before placing food on it.

Start cooking food with switch turned to "high."

Reduce heat during cooking process to "medium" or "low" in order to slow the cooking of the food, if desired.

How to clean.—Wipe the grill while it is still warm with a paper towel. This will absorb any extra fat and remove small particles of food.

Remove additional fat with a cloth that has a small amount of vinegar on it.

Scour with cleanser or pumice stone and wipe clean with cloth rinsed in clear water.

Do not immerse an electric grill in water.

Hot cup

A hot cup is an electrically heated container used for heating beverages and soups. The heating element is built in the bottom of the cup and is wired for just 1 rate of heating. For additional information concerning the hot cup see chart, page 11.

How to use.—Do not preheat cup.

Pour soup or beverage in cup and plug in for heating.

How to clean.—Pour hot soapsuds into the cup and wash.

Rinse thoroughly.

Do not immerse the cup in water as the heating element will be damaged.

TYPE II

The second type of equipment is made up of electrically heated, insulated cabinets or boxes designed for either holding precooked foods at a warming temperature, completing the cooking of partially cooked foods, or thawing and heating of frozen precooked foods.

Examples of this type of equipment are the AG-1 hot chest or drawer, the Maxson "Whirlwind" oven, and the FTG-3 food warmer (or B-2, as it is referred to in the Army Air Forces where it is used for high altitude feeding). There are only a few FTG-3 food warmers now in use at naval activities and additional procurement is not anticipated.

The AG-1 hot chest should be distinguished here from the entire AG-1 unit, which is a cabinet with 2 hot chests and is classed as type III equipment.

AG-1 hot chest

The AG-1 hot chest or drawer is an insulated box with electrical elements installed in the bottom for heating the chest. Food is prepared and packed in the chests in a ground galley.

In the chest are 4 deep wells, each having a capacity of 1 gallon, which may be used as utensils for heating or cooking foods on the galley ranges. If other utensils are used for heating or cooking food, care must be taken to insure that the foods are hot when poured from these utensils into the deep wells. For additional information concerning the AG-1 hot chest see chart, page 12.

How to use.—Preheat chest 5 to 10 minutes in ground galley. Place deep wells containing food in chest.

Mark each chest with hour of packing food.

Keep chest connected in ground galley until removed for delivery to aircraft.

Connect chest to electric power line in plane immediately after take-off.

Keep chest connected until food is served. During this holding period, the food is maintained at a temperature of 153° F. to 165° F. by means of thermostatically controlled heat.

Do not serve food which has been held in AG-1 hot chest longer than 15 hours.



AG-1 hot chest

How to clean.—Return AG-1 hot chest to ground galley for cleaning. Wash food wells, sterilize and air dry upside down on racks.

Wipe hot chest thoroughly clean inside and out. *Do not* immerse in water. The electrical elements built in the hot chest will be damaged if allowed to come in contact with water.

Maxson "Whirlwind" oven

The Maxson "Whirlwind" oven is used for the defrosting or thawing and heating of frozen, pre-cooked food in flight. It is a square insulated cabinet which has electrical elements installed between double walls in the sides. A fan installed in the back of the heater circulates air over the heating elements and in turn the hot air blowing off the elements circulates over the food. Supports are built in each side

of the oven to hold paper plates. Special processed paper plates used in the oven have individual portions of food frozen on them. The capacity of the present oven is 6 plates. For additional information concerning the Maxson "Whirlwind" oven, see chart, page 12.

How to use.—Turn on switch. Set dial on "Pre-heat." A bell rings to indicate end of preheating period. Temperature of oven at this point is approximately 325° F.

Place 6 plates of frozen, pre-cooked food (Maxson Sky plates) in oven with side of the plate containing the meat turned to the back and the vegetables at the front.

Adjust baffles across tops of plates to cover vegetables. This protects vegetables from surface drying.

Thaw and heat food approximately 15 minutes. The bell rings indicating end of heating period. At this time the internal temperature of the food is approximately 145° F.

Reheat oven 2 to 3 minutes if second group of plates are to be thawed and heated.

How to clean.—Remove baffles, wash in soap suds, rinse and dry.

Clean inside of oven by wiping thoroughly with a damp cloth.

Replace baffles in oven or store in drawer ready for next use.

FTG-3 food warmer

The FTG-3 food warmer is an electrically heated chest used for maintaining the temperature of hot food prepared in a ground galley or for heating canned foods. The recommended procedure for handling it is the same as is suggested for the AG-1 unit, page 4. For additional information concerning the FTG-3 food warmer, see chart, page 12.

TYPE III

The third type of airborne galley equipment is a combination of the first 2 types in which deep food wells are combined with either hot plates, grills or hot cups. A larger variety of foods may be served from this type of equipment than from any other type, resulting in better balanced hot meals. This equipment, being a combination of warming and cooking facilities, is the most complete airborne galley equipment now used in flight feeding and is suitable for use in both heavier-than-air and lighter-than-air ships. The AG-1 and the Helmco units are examples of this type of flight galley equipment.

AG-1 unit

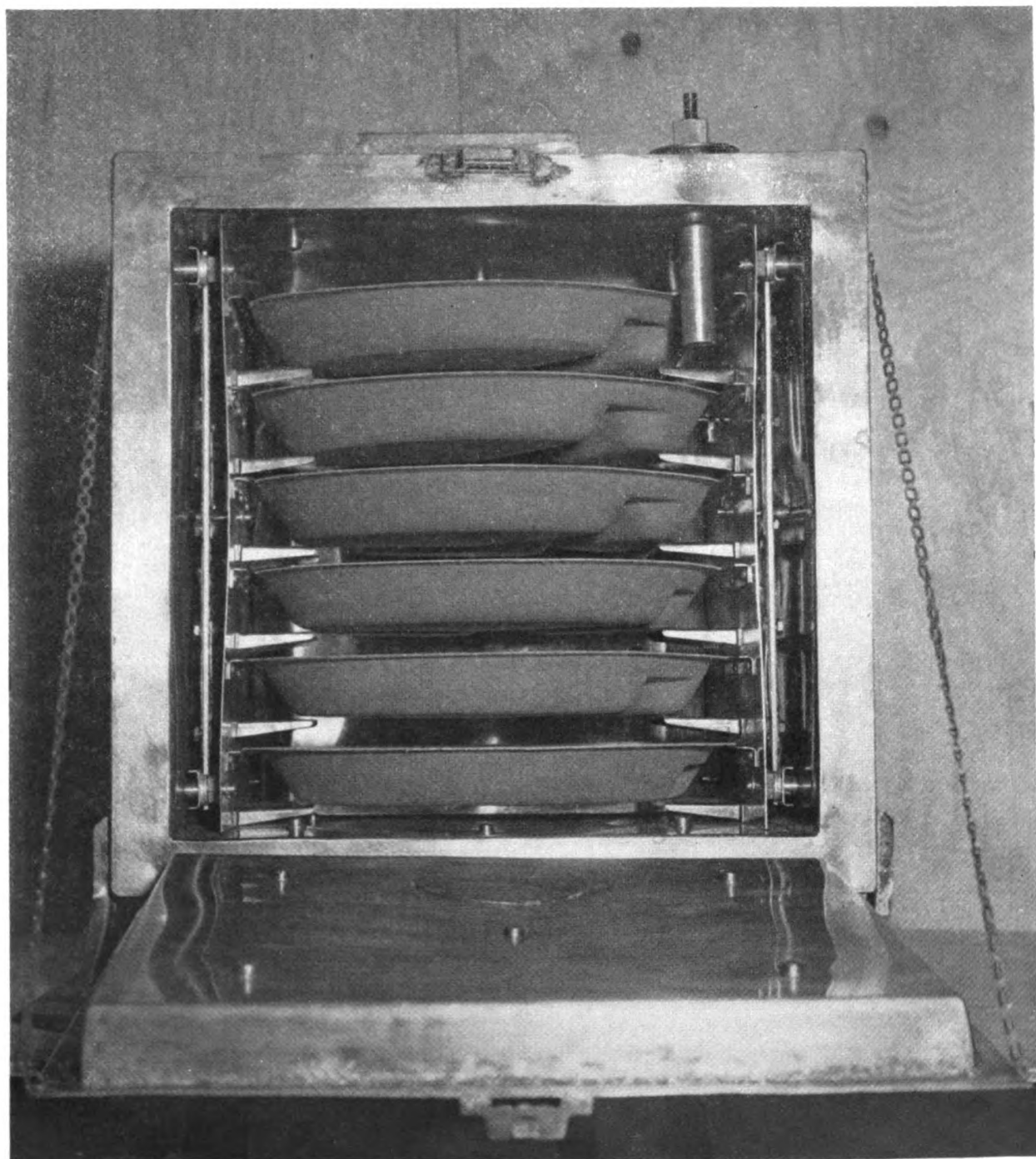
The AG-1 unit is a cabinet fitted with 2 hot chests, a drawer for plastic dishes, cups and other

serviceware, and 2 hot plates built in the top surface of the cabinet. The drawer for serviceware fits in the cabinet under the hot chests. The AG-1 hot chest has been described and the uses and care for it given on pages 3 and 12, under Type II equipment.

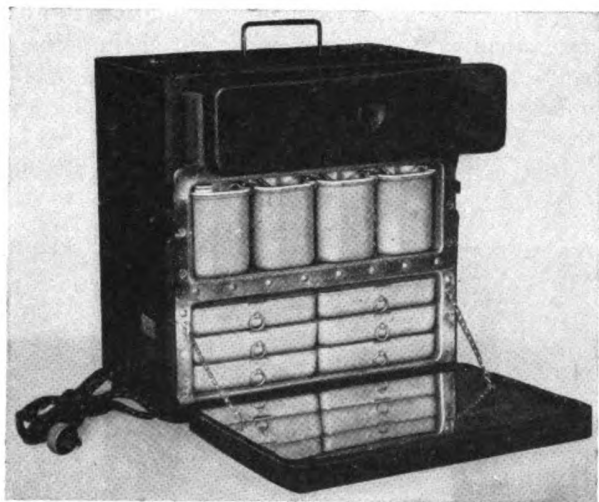
Each hot chest has the capacity of 1 meal for

approximately 12 to 15 men. In addition to the meals than can be packed in the hot chests, others can be prepared in flight on the hot plates. For additional information concerning the AG-1 unit see chart, page 13.

How to use.—Preheat chest 5 to 10 minutes in



Maxson "Whirlwind" oven



FTG-3 food warmer
(same as Army B-2 food warmer)

ground galley. Place deep wells containing food in chest.

Mark each chest with hour of packing food.

Keep chest connected in ground galley until removed for delivery to aircraft.

Connect chest to electric power line in plane immediately after take-off.

Keep chest connected until food is served. During this holding period, the food is maintained at a temperature of 153° F. to 165° F. by means of thermostatically controlled heat.

Do not serve food which has been held in AG-1 unit longer than 15 hours.

Prepare additional food on hot plates. Serve food immediately after preparation, or transfer to food wells in preheated chest to hold warm. This method makes it possible to hold foods while additional foods or beverages are being prepared.

How to clean.—Return AG-1 hot chests to ground galley for cleaning.

Wash food wells, sterilize and air dry upside down on racks.

Wipe hot chest thoroughly clean inside and out. *Do not* immerse in water. The electrical elements built in the hot chest will be damaged if allowed to come in contact with water.

Clean cabinet of AG-1 unit, which is installed in plane, after each flight.

Wash cabinet, inside and out, with cloth and clean soap suds. Rinse with cloth and clear water. Wipe dry.

Helmco unit

The Helmco unit is constructed in 2 separate

sections that are held together by clamps. The lower part is made up of storage shelves and drawers. The upper section contains food wells, coffee tank, grill and hot cup. The upper part of the unit is unfastened from the lower part when it is used for transporting precooked or partially cooked food from the flight ration galley or general mess galley to the aircraft. For additional information concerning the Helmco unit see chart, page 13.

How to use.—Prepare food in ground galley. Pack in deep wells.

Place wells in upper section of unit for delivery to aircraft.

Connect unit with electric power line in aircraft as soon as possible after take-off.

Keep unit connected until food has been served.

Prepare additional foods in flight on grill and in hot cup.

Drain all excess fat into attached grease cup, when cooking foods on grill. Grease spilled into the heating elements will damage the elements.

How to clean.—Return upper section of unit to ground galley for cleaning.

Wash food wells, sterilize and air dry upside down on racks.

Wipe upper section of unit thoroughly clean inside and out. *Do not* immerse in water. The electrical elements built in the unit will be damaged if allowed to come in contact with water.

Wipe grill with paper towel. Scour with cleanser and wipe clean with cloth rinsed in clear water.

Pour hot soapsuds into the hot cup and wash. Rinse thoroughly. Do not immerse the cup in water.

Clean lower section of Helmco unit, which is installed in aircraft, after each flight.

TYPE IV

The fourth type of equipment is an insulated container that depends upon the preheating of the container by means of hot water or steam, the heat in the hot food, and the insulation of the container for maintaining the precooked food hot until serving time.

When the container is opened, it is imperative that all the food be served for that meal since there will not be sufficient heat in the food container for maintaining the food hot for a second meal. This is not necessarily true of thermos jugs or bottles containing hot beverages. The liquid will usually retain heat long enough to allow for the opening of the vacuum jug or bottle several times. Examples of this type are the AerVoid vacuum food carrier and thermos jugs or bottles.

AerVoid vacuum food carrier

The AerVoid is a vacuum insulated food carrier with a set of 4 fitted pans. The pans are of 1 or 2-gallon capacity with a total capacity of 5 gallons for

the entire food carrier. For additional information concerning the AerVoid food carrier see chart, page 14.

How to use.—Prepare food in ground galley. Pack



AG-1 Unit



AerVoid vacuum food carrier

as hot as possible in pans.

Preheat food carrier with steam or boiling water for 10 to 15 minutes before packing.

Remove water from carrier. Place pans in food carrier quickly to avoid unnecessary loss of heat.

Cover. Adjust clamps. Deliver to aircraft immediately.

Serve food within 3 to 4 hours after takeoff.

How to clean. Return food carrier to ground galley for cleaning. Wash pans, sterilize and air dry upside down on racks.

Wash inside of food carrier with soapsuds. Rinse. Wipe outside clean with cloth. Leave open to air dry.

SUPPLEMENTARY EQUIPMENT

Some of the airborne galley equipment needs to be supplemented with additional equipment, such as cooking utensils, coffee percolator, serviceware, a box for supplementary provisions, and a refrigerator box.

Only in planes where the entire meals are being prepared in flight will it be necessary to issue all of this equipment. Usually, only a few of these items are needed.

Cooking Utensils

The cooking utensils generally used are the Flex-Seal pressure cooker in 2 or 4-quart size, coffee pots, frying pans, serving spoons, butcher knives, serving forks, spatulas, and can openers.

Flex-Seal pressure cooker

How to use.—Cover bottom of cooker with water, about $\frac{1}{4}$ to $\frac{1}{3}$ cup.

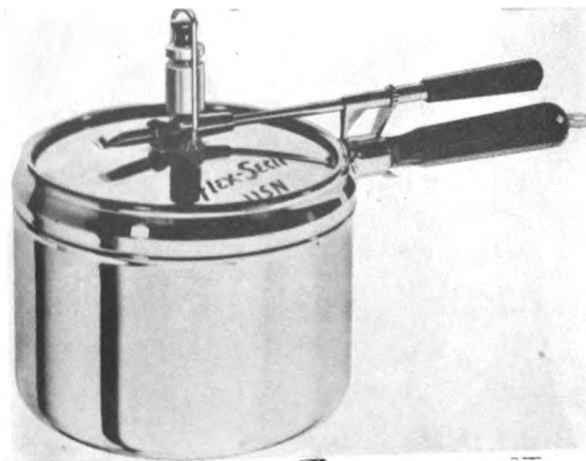
Place vegetable in cooker. Do not overload cooker.

Tilt cover sidewise. Slip, first, the lowered edge under rim of cooker, then other side. Never force the cover. Place hook over to left.

Place prong on handle of cover on adjustment screw in small hole on the rim of cooker.

Squeeze both handles firmly together, with hook on cover handle over to the left. Cover will immediately straighten out.

Continue to squeeze handles firmly together. Flip hook over to right, allowing it to fall under and clamp together lower and upper handles to seal cooker. Do not force hook into position.



Flex-Seal pressure cooker



Elmcro unit

Set cooker over center of burner. Heat until steam can be seen and heard issuing from vent pipe.

Place vent weight over vent pipe as soon as a steady flow of steam emerges from vent pipe, indicating the complete elimination of air. In 2 or 3 minutes the pointer on the indicator will move towards the center notch and the vent weight begin to jiggle and "hiss." This indicates that 15 pounds pressure has been reached.

Turn switch down to "low." The fact that the vent weight will stop jiggling does not mean the pressure is insufficient. Start counting cooking time from this point. Consult "Fresh Vegetable Cooking Chart," using Flex-Seal pressure cooker, page 29, for cooking time recommended.

Remove cooker from heat, at end of cooking period. Let pressure drop to zero. This requires about 3 minutes, during which time cooking continues on retained heat. Remove vent weight immediately to avoid vacuum noise when pressure reaches zero. Hold vent weight when moving cooker. Pressure will be down in about 3 minutes, as indicated by pointer returning to extreme side of indicator.

Lift off vent weight. Squeeze handles to disengage hook from under lower handle and flip it upwards to the left. Cover will then flex down ready for removal.

Tilt off cover in same manner in which it was put on. Remove vegetables and serve.

Use the same procedure for cooking canned foods. Omit the $\frac{1}{4}$ or $\frac{1}{2}$ cup water.

Empty contents of can with liquid or juices into cooker. Cover. Heat until pressure is reached. Remove from heat. Serve.

Coffee percolators

Coffee percolators are used aboard aircraft for the preparation of coffee. On board aircraft they are heated by placing them on electric hot plates.

How to use.—Remove metal perforated basket from percolator.

Measure desired amount of water into percolator.

Measure correct amount of coffee into basket.

Adjust basket lid. Replace basket in percolator. Close lid of percolator.

Place filled percolator on hot plate. Heat until coffee brew is of the desired strength.

How to clean.—Wash after each using in hot soap-suds, followed by a clear hot rinse. Unless a coffee percolator is kept scrupulously clean, the flavor of the coffee will be affected.

Serviceware

Serviceware issued for meals may be plastic plates

or mess trays, plastic cups and bowls, or paper plates and cups. Paper items are the most satisfactory in areas where serviceware cannot be properly cleaned and sterilized when returned to a ground galley.

Silverware should be provided in quantity allowing a knife, fork and spoon for each man. The practice usually followed in serving meals in flight is for 2 to 4 men to be served at one time. Since the men mess in relays, it may be possible for the silverware to be washed between servings and thus reduce the amount of silverware to be carried. This procedure should be followed only if the silverware can be properly washed. Most planes are not equipped for sanitary dish washing, and where this condition exists, enough silverware should be provided for all.

Salt and pepper shakers may be included as 2 separate pieces or the seasonings may be mixed and carried in 1 container or shaker.

Provisions box

A paper carton or wooden box in which to carry extra provisions, and the serviceware is a necessary part of the flight ration gear. Foods that are to be prepared in flight such as eggs, bacon, and sandwich ingredients for the preparation of sandwiches, tea, coffee or cocoa can be stowed in this box. The foods that supplement a precooked meal such as bread, butter, crackers, salad ingredients, desserts, fruit juices, and seasonings may also be packed in the provisions box.

The provisions box not only serves as a means of carrying food items and serviceware to the plane, but also provides a place in the aircraft for the sanitary, efficient stowage of these items.

After a meal has been served, place the soiled utensils and serviceware in the box for return to the ground galley for cleaning.

Refrigerator box

Refrigerator boxes are not in common use because they mean added weight and space in the aircraft. For the most part, provisions are selected for flight rations that do not require refrigeration, such as canned provisions and fresh foods that have been precooked. The temperature in a plane at altitude may in some locations be cold enough that refrigeration facilities are not needed, and a greater variety of foods may be carried.

Where fresh or frozen provisions which require refrigeration are carried, any one of the following types of refrigeration may be used: An insulated metal ice box, a balsa wood box, or a wicker basket. The balsa wood box should be thoroughly chilled in a cold storage room before food is packed in it. This will increase the holding qualities of the box.

CHART FOR TYPE I EQUIPMENT

	Description	Size or weight, approximately	Power requirement	Capacity	Comments
Hot Plate Purpose: 1. To cook fresh or frozen foods. 2. To warm canned products.	A flat, round metal surface with electrical elements installed underneath. It is designed for placing pans on it for cooking or heating foods.	Diameter = 6 to 8 inches Weight = 5 pounds	600 watts to 1,000 watts	1 hot plate furnished for each 6 men for the preparation of meals. (Planes are furnished with no more than 2 hot plates).	1. Additional equipment needed: Cooking and serving utensils. 2. Approximate time required for preparation of one meal: 10 to 15 minutes per man. 3. Simple installation is required. 4. Often no storage place is available for additional equipment. 5. Menus that can be prepared on a hot plate are limited. 6. Odors from spilled foods are likely to be more prevalent. 7. This equipment requires maximum time and attention to use.
Grill Purpose: 1. To grill meats and sandwiches. 2. To cook eggs.	A flat metal surface with electrical elements installed underneath. The edge of the grill is turned up to hold the fat used in cooking eggs, grilling sandwiches, and meats.	Weight = 5 pounds	1,000 watts	1 grill is furnished for each 6 men for the preparation of meals. (Planes are furnished with no more than 2 grills).	1. Additional equipment needed: serving utensils. 2. Approximate time required for preparation of one meal: 8 to 12 minutes per man. 3. Simple installation is required. 4. Menus that can be prepared on a grill are limited. 5. Rancid fat left on grill contaminates and affects flavor of food. 3. This equipment requires maximum time and attention to use.
Hot Cup Purpose: 1. To heat beverages and soups.	A cup shape container with handle. Electrical element is built in the bottom.	Height = 7¼ inches Diameter = 4¼ inches. Weight = 3½ pounds.	500 watts. Wired for 24 volts DC	32 ounces. Will hold beverage or soup for 4 portions.	1. A hot cup is ordinarily used to supplement other equipment. 2. Approximate time required for heating cup of beverage or soup: 15 to 20 minutes. 3. No installation required: Plug into power line outlet.

CHART FOR TYPE II EQUIPMENT

	Description	Size or weight, approximately	Power requirement	Capacity	Comments
AG-1 Hot Chest					
Purpose:	A heavily insulated box with 2 electrical elements built in the bottom. The lid is removable. Each box or hot chest contains 4 separate deep wells.	Hot Chest	Hot Chest	4 1-gallon wells.	1. Additional equipment needed: Serving utensils.
1. To finish cooking partially cooked food.		Height = 8¾ inches.	500 watts.	1 meal for 12 to 15 men.	2. Approximate time required for service of food for 1 meal: 3 to 5 minutes per man.
2. To hold cooked food hot.		Width = 17½ inches.	Wired for 110 volts for preheating in flight galley and wired for 27 volts for use in plane.		3. No installation required: Plug into power line.
		Depth = 17½ inches.			4. Hot chest must be connected constantly while food is being held in it.
		Deep Well			5. <i>Food must not be eaten after being held, longer than 15 hours.</i>
		Height = 6½ inches.			6. Precooked food for packing in hot chest is prepared in a flight ration galley or by specially assigned personnel in a general mess galley.
		Diameter = 7¼ inches.			
		Net Weight = 21 pounds.			
Maxson Whirlwind Oven					
Purpose:	An insulated, electrically heated chest with a fan built in the back of it. Supports on the sides of oven hold 6 plates of frozen, precooked food during heating period.	Height = 19 inches.	1,800 watts for heater.	1 meal for 6 men can be heated every 15 to 17 minutes.	1. Additional equipment needed: An insulated box for holding frozen meals.
1. To thaw and heat frozen, precooked food.		Width = 14 inches.	235 watts for fan motor.		2. Approximate time required for service of food for 1 meal: 20 minutes per 6 men.
		Depth = 20¼ inches.	Wired for 24 volts DC.		3. Installation required. Easily removed if repairs are necessary.
		Weight = 35 pounds.			4. Oven must be preheated to a temperature of 325° F. before placing meals in it.
					5. Frozen, precooked food may be kept for weeks if maintained at a temperature of 10° F. or lower.
					6. If frozen, precooked meals are purchased, no preparation in ground galleys is required. Only adequate refrigerated storage and facilities for issue are required.
FTG-3					
Purpose:	A chest that consists of an electrically heated compartment and an insulated drawer. The heated compartment is divided into 2 sections. The lower section is designed to hold 6 divided food trays. The upper section contains 12 covered metal beverage and soup containers. The insulated drawer is divided into 2 compartments for holding serviceware and supplementary food.	Height = 17½ inches.	175 watts.	1 meal for 6 men.	1. No additional equipment needed.
1. To hold galley prepared food hot.		Width = 17¼ inches.	Wired for 110 volts AC for preheating in flight galley and wired for 27 volts DC for use in plane.		2. Approximate time required for service of food for one meal: 1 to 2 minutes per man.
2. To heat canned food.		Depth = 11¼ inches.			3. No installation required: Plug into power line.
		Weight = 33 pounds.			4. Food warmer must be connected constantly while food is being held in it.
					5. <i>Food must not be eaten after being held longer than 15 hours.</i>
					6. Precooked food for packing in food warmer is prepared in a flight ration galley or by specially assigned personnel in a general mess galley.

CHART FOR TYPE III EQUIPMENT

	Description	Size or weight, approximately	Power requirement	Capacity	Comments
AG-1 Unit					
Purpose: 1. To finish cooking partially cooked food. 2. To hold cooked food hot. 3. To cook foods.	Two hot chests fitted into a metal cabinet by means of glides. Each hot chest contains 4 separate deep wells. The top of cabinet has 2 electric hot plates. A set of dishes and cooking utensils are supplied in a special drawer in bottom of cabinet.	Cabinet	Hot Plates (2)	8 1-gallon wells. 1 meal for 25 to 30 men or 2 meals for 12 to 15 men or 3 meals for 12 to 15 men, with preparation of supplemental food in flight.	1. Additional equipment needed: Cooking and serving utensils. 2. Approximate time required for preparation of 1 meal using hot plates and service of food from wells in hot chests: 8 to 12 minutes per man. 3. Installation required. 4. Hot chests must be kept plugged in constantly while food is being held in them. 5. <i>Food must not be eaten after being held in hot chests longer than 15 hours.</i> 6. Precooked food for packing in hot chests may be prepared in a flight ration galley or by specially assigned personnel in a general mess galley. 7. Cooking facilities and warming spaces are provided, which make it possible to serve more complete meals.
		Height = 27½ inches.	1,000 watt elements, 27 volts, 37 amperes.		
		Width = 21½ inches.	Hot Chests		
		Depth = 18¾ inches.	500 watts each.		
		Hot Chest	Wired for 110 volts for preheating in flight galley and wired for 27 volts for use in plane.		
		Height = 8¾ inches.			
		Width = 17½ inches.			
Helmco Unit Purpose: 1. To finish cooking partially cooked food. 2. To hold cooked food hot. 3. To cook foods.	An air ship galley unit designed to contain 4 food wells, a coffee tank, an electric grill, a hot cup, plus work shelves, and drawers for galley gear.	Cabinet	Hot Food Wells	4 3-quart wells. 1 meal for 10 to 12 men.	1. Additional equipment needed: Serving utensils. 2. Approximate time required for preparation of 1 meal using grill and hot cup and service of food from wells: 10 to 15 minutes per man. 3. Installation required. 4. Food wells must be kept plugged in constantly while food is being held in them. 5. <i>Food must not be eaten after being held in food wells longer than 15 hours.</i> 6. Precooked food for packing in food wells may be prepared in a flight ration galley or by specially assigned personnel in a general mess galley. 7. Cooking facilities and warming spaces are provided, which make it possible to serve more complete meals.
		(entire unit)	170 watts per well, 680 watts per 4 wells, 110 volts A.C.		
		Height = 40 inches.	1½ amperes.		
		Width = 32 inches.	Coffee Tank		
		Depth = 18 inches.	170 watts.		
		Top Section	110 volts A.C.		
		Height = 9 inches.	1½ amperes.		
		Width = 32 inches.	Hot Cup		
		Depth = 18 inches.	660 watts.		
		Net Weight = 80 pounds.	110 volts.		
			6 amperes.		
			Grill		
			550 watts, maximum, 110 volts, 5 amperes.		
			Maximum wattage not to exceed 1500 watts.		

CHART FOR TYPE IV EQUIPMENT

	Description	Size or weight, approximately	Power requirement	Capacity	Comments
AerVoid Vacuum Food Carrier Purpose: 1. To hold cooked food warm.	A vacuum insulated food carrier equipped with a 4-pan assembly. The pan assembly consists of 1 2-gallon pan and 3 1-gallon pans. The pans are equipped with lids. The food carrier may be fitted into a canvas quilted jacket, termed Aerjac, for increasing heat efficiency.	Food Carrier	None	1 2-gallon pan. 3 1-gallon pans. 1 meal for 20 to 25 men.	1. Additional equipment needed: Serving utensils. 2. Approximate time required for service of food for one meal: 3 to 5 minutes per man. 3. Food is held warm for just a few hours. 4. Extreme care must be taken to prevent any contamination of food. 5. Precooked food for packing in thermos container may be prepared in a flight ration galley or by specially assigned personnel in a general mess galley.
		Height = $24\frac{1}{2}$ inches.			
		Diameter = $12\frac{3}{8}$ inches.			
		Net Weight = $34\frac{1}{2}$ pounds with Aerjac.			
		2-gallon pan			
		Height = 7 inches.			
		Diameter = $9\frac{1}{2}$ inches.			
		1-gallon pan			
		Height = 4 inches.			
		Diameter = $9\frac{1}{2}$ inches.			

NUTRITION

IN-FLIGHT FEEDING

One of the most important factors in maintaining optimum health is the proper kind of food. Food served to airmen in flight must be sufficient in quantity, quality and variety to supplement that served to them on the ground, in order that the total ration be adequate to meet the nutritional requirements for optimum health and performance of duty.

The same food nutrients, protein, fat, carbohydrates, vitamins, and minerals essential for personnel on any type of duty are also essential for flight crews. The following groups of foods are recommended in the day's ration: One or more servings of meat, fish or fowl daily; 2 or more servings of vegetables in addition to potatoes, one of which is a green or yellow vegetable; 2 or more servings of fruit, one of these preferably a citrus fruit or tomatoes; 2 or more servings of cereals and bread; 1 egg; 1 pint of milk or its equivalent; butter and other fats; and sweets or desserts to satisfy the appetite.

Individuals do not always react in the same manner to all foods. Some will find certain foods to be gas forming or laxative in effect to such an extent that they are incapacitating. Since foods do not affect all individuals in the same manner, it is the responsibility of aviation personnel to know their own reaction to foods served to them in the past and reject those which have been found to cause trouble. As an aid to commissary personnel, those foods that may be occasionally rejected by aviation personnel are: Cabbage, cauliflower, raw onions, dried beans and peas, melons, radishes, cucumbers, fatty or rich foods. Frequently, carbonated beverages are found undesirable because of their gas content.

Long hours in flight without food or with inadequate amounts of food will cause the men to become fatigued so that they are not able to perform their duties in the most efficient manner. It is desirable that aviation personnel, even when on flights of only 3 to 4 hours' duration, have nourishment available for consumption in flight. Not infrequently the duration of a flight must be prolonged by several hours due to unforeseen circumstances. A few otherwise "normal" persons are subject to symptoms caused by the low blood sugar which may supervene 4 hours after the last meal; it is likely that pilot performance is impaired by a low blood sugar which is therefore to be avoided. Low blood sugar symptoms may be avoided by the consumption of about 3 to 4 ounces of candy during a 4 hour period. If the candy available is hard to handle in warm climates, cookies or crackers may be more desirable.

Airsickness that may be caused by the motion of the plane in bad weather is also considerably affected by the nature of the diet. Personnel who have eaten an easily digested meal will be less susceptible to airsickness than personnel who have consumed a meal high in fat content or highly seasoned foods or those foods which are gas forming. When personnel are airsick, odors from the preparation of food should be kept at a minimum to prevent aggravating their condition.

A study made by a large commercial airline concludes that "there is no question but that mental and physical efficiency, as well as general comfort during a flight, can be greatly influenced by eating smaller amounts of the right kinds of food." Therefore if smaller amounts of food are eaten at mealtime, between-meal snacks are recommended in order to prevent the men from becoming hungry. A snack that can be eaten at a man's duty station may prove to relieve monotony and boredom on a long patrol flight as well as to provide energy for him. These snacks may consist of any one or two of the following: Fruit, candy, cookies or crackers, nuts, a sandwich or beverage (not carbonated).

Where galley equipment is limited on transport planes, the pilots and crew should be given the preference in the service of hot meals. Passengers may be provided sandwich meals supplemented by hot soups or beverages. This policy is recommended because the primary object of the feeding in-flight program is to provide well balanced meals to those men who are taking a large number of their meals in flight and who must have proper diets to maintain their health and efficiency.

HIGH ALTITUDE FEEDING

Special diets have been recommended by some authorities for the purpose of delaying symptoms of anoxia resulting when aviation personnel are flying at altitudes above 10,000 feet without the benefits of oxygen equipment. Experiments indicate that high carbohydrate diets eaten at preflight and in-flight meals will raise the "ceiling of man" approximately 1,000 to 5,000 feet when supplementary oxygen is not available. Since high altitude flights for extended periods are not frequent in the Navy and adequate oxygen equipment is provided for the protection of personnel, changes in the Navy diet for this purpose are not necessary.

PREFLIGHT AND POSTFLIGHT FEEDING

Supplies and Accounts Memoranda, art. 1320-8, Procurement and Components, subpar. (b) states,

"In Alaska and all other combat zones, personnel actually engaged in flight operations may be furnished flight rations before and after the flight when the regular messing facilities of such personnel are not available because of flight operations."

It is considered necessary that aviation personnel be furnished rations before a flight if the flight goes out 2 or more hours after the last meal and is to last 3 to 4 hours or longer. If rations are carried for consumption in flight, a preflight snack or meal is not always necessary. Effort must be made to see that men engaged in flight operations are not without food over a period longer than 5 to 6 hours.

Preflight snacks should be available for carrier aviation personnel in a room convenient to the ready room. Appropriate foods for serving are: Sandwiches, soups, fruit, fruit juices, cookies, and bev-

erages. Candies and cookies that may be carried for in-flight consumption should be available here also. Proper methods to employ in making sandwiches are given in the Navy Cook Book. If sandwiches are carried from the snack room by carrier aviation personnel for consumption in flight, commissary personnel should note information given on pages 28 and 31, regarding the kinds of sandwiches not suitable for in-flight feeding because they are potential sources of food poisoning.

For the most part, postflight feeding can be cared for through regular messing facilities. On those occasions when aviators flying in combat zones return from long flights and are not physically ready to accept a full meal, they should return to the snack room for the small amount of food they may prefer to eat during their rest or recovery period.

MENU PLANNING

The menus in this section are planned to cover as many situations as possible where special problems arise in connection with feeding flight personnel and passengers.

Ease in preparation and service of food from warming units or other equipment is also taken into consideration in the menus. Various types of airborne galley equipment provide different facilities for meal preparation. The result is that some of these facilities have more limiting effects on the menu than others.

TYPES OF MENUS FOR IN-FLIGHT FEEDING

Menus suitable for in-flight feeding (see pages 18 through 25) have been classed in the following manner:

- I. Precooked or partially cooked meals for holding in warming units, the AG-1 unit, Helmco unit, FTG-3 food warmer, and AerVoid food carrier.
- II. Frozen, precooked meals to be heated in Maxson "Whirlwind" oven aboard aircraft.
- III. Hot meals to be prepared aboard the aircraft using hot plates, or grills and hot cups.
- IV. Sandwich meals for preparation in-flight.

AIDS FOR USING MENUS

The small letters.—Small letters in parentheses placed before each food item listed on the menus, pages 18 to 24, indicate where that food can be packed. Each menu is planned for the use of a specific type of flight galley equipment. The mean-

ing of the small letters is defined in the key at the bottom of the menu.

Menu card.—When food for 2 or more meals is packed in a single provision box or warming unit, the selection of foods from the box for organizing a meal can be done more quickly if a menu card, for the use of the flight orderly, is packed with the provisions. The planned menu is written on the menu card as is shown in the example.

DINNER MENU

- (a) Pot roast of beef and gravy
- (a) Steamed potatoes
- (a) Stewed tomatoes
- (c) Carrot sticks
- (c) Whole wheat bread (c) Butter
- (c) Iced cup cakes (a) Coffee
- (a) Food or beverage to be packed in deep well.
- (b) Food or beverage to be prepared on hot plate.
- (c) Food or beverage to be carried in provision box.

Sample menu card for use with AG-1 Unit

Recipes.—Recipes for the suggested dishes on the menus can be found in the Navy Cook Book.

For special suggestions in regard to preparation of food for feeding in flight, see pages 27 to 29.

BILL OF FARE FOR FLIGHT RATIONS

AG-1 Unit—Serves approximately 12 men, 3 meals

The following menus are based on the use of precooked or partially cooked food and the preparation of supplemental food in flight

	BREAKFAST	DINNER	SUPPER
MONDAY	(c) Pineapple juice (c) Dry cereal (c) Milk (a) Scrambled eggs and bacon (c) Jam (c) Melba toast (a) Coffee	(a) Pot roast of beef and gravy (a) Steamed potatoes (a) Stewed tomatoes (c) Carrot sticks (c) Whole wheat bread (c) Butter (c) Iced cup cakes (a) Coffee	(a) Cream of split pea soup (c) Crackers (c) Cold cuts (a) Hot potato salad (c) Rolls (c) Jam (c) Sliced peaches (c) Chocolate candy (b) Coffee
TUESDAY	(c) Orange (a) Oatmeal (c) Milk (a) Grilled ham (c) Pecan rolls (c) Butter (a) Coffee	(a) Fried chicken (a) Mashed potatoes (a) Buttered asparagus (c) Apple and celery salad (c) Rolls (c) Jam (c) Cookies (b) Coffee	(a) Tomato soup (c) Crackers (a) Meat loaf (a) Buttered lima beans (c) Bread (c) Butter (c) Pear (c) Brownies (b) Tea
WEDNESDAY	(c) Grapefruit sections (c) Dry cereal (c) Milk (a) Fried eggs and bacon (c) Bread (c) Butter (a) Coffee	(a) Roast beef and gravy (a) Escalloped potatoes (a) Buttered green beans (c) Pickle relish (c) Bread (c) Butter (c) Cherry cobbler (a) Coffee	(a) Vegetable soup (c) Crackers (a) Baked veal chop (a) Spanish rice (c) Carrot sticks (c) Bread (c) Butter (c) Iced white cake (b) Coffee
THURSDAY	(c) Stewed apples (c) Dry cereal (c) Milk (a) Corned beef hash (a) Muffins (c) Jam (a) Coffee	(a) Baked smoked ham (a) Candied sweet potatoes (a) Buttered peas (c) Grapefruit and celery salad (c) Whole wheat bread (c) Butter (c) Gingerbread (b) Tea	(a) Beef stew with vegetables (a) Steamed whole potatoes (a) Sliced pickled beets (c) Bread (c) Butter (c) Jelly roll (b) Cocoa
FRIDAY	(c) Banana (c) Cornflakes (c) Milk (a) Grilled Canadian bacon (c) Corn bread (c) Butter (a) Maple flavored sirup (a) Coffee	(a) Veal cutlet (a) Mashed potatoes (c) Mixed vegetable salad (c) Bread (c) Butter (c) Apricot upside down cake (b) Coffee	(a) Tomato broth (c) Crackers (a) Macaroni au gratin (a) Buttered peas (c) Celery sticks (c) Whole wheat bread (c) Butter (c) Apple (c) Cookies (b) Coffee
SATURDAY	(c) Orange (a) Oatmeal (c) Milk (a) Creamed ham and eggs on (c) Toast (c) Sweet rolls (c) Butter (b) Coffee	(a) Salisbury steak (a) Black-eyed peas (a) Buttered carrot strips (c) Lettuce and tomato salad (c) Bread (c) Jam (c) Sliced peaches (b) Coffee	(a) Grilled lamb chop (a) Browned potatoes (a) Stewed tomatoes (c) Pineapple and cheese salad (c) Bread (c) Butter (c) Filled cookies (b) Tea
SUNDAY	(c) Tomato juice (c) Dry cereal (c) Milk (a) Scrambled eggs (a) Crisp bacon (a) Hot biscuits (c) Jam (a) Coffee	(a) Grilled beef steak (a) Parslied potatoes (a) Buttered green beans (c) Lettuce salad (c) Bread (c) Butter (c) Cranberry jelly tarts (a) Coffee	(a) Barley broth (c) Crackers (c) Assorted sandwiches (Peanut butter, jelly, cheese spread) (c) Canned fruit salad (c) Raisin nut cake (b) Cocoa

(a)=Food or beverage to be packed in deep well.
(b)=Food or beverage to be prepared on hot plate.
(c)=Food or beverage to be carried in provisions box.

BILL OF FARE FOR FLIGHT RATIONS

Helmco Unit—Serves approximately 12 men, 2 meals

The following menus are based on the use of precooked or partially cooked food

	BREAKFAST	DINNER	SUPPER
MONDAY	(e) Orange (e) Assorted dry cereal (e) Milk (a) Scrambled eggs (e) Bread (e) Butter (d) Coffee	(a) Baked ham (a) Buttered peas (a) Mashed potatoes (e) Lettuce salad (e) Dressing (e) Sugar cookie (e) Butter (e) Bread (e) Butter (c) Tea	
TUESDAY	(e) Canned plums (a) Hot cereal (e) Milk (a) Corn fritters (e) Sirup (b) Grilled bacon (e) Bread (e) Butter (d) Coffee	(e) Grapefruit juice (a) Beef stew with vegetables (a) Buttered asparagus (e) Coconut chocolate cookies (e) Rolls (e) Butter (c) Coffee	
WEDNESDAY	(e) Tomato juice (e) Assorted dry cereal (e) Milk (b) Fried eggs (a) Grilled Canadian bacon (e) Bread (e) Jam (d) Coffee	(c) Vegetable soup (e) Crackers (a) Grilled lamb chop (a) Buttered green beans (a) Steamed potatoes (e) Carrot sticks (e) Angel food cake (e) Bread (e) Butter (e) Milk	
THURSDAY	(e) Orange (a) Whole wheat cereal (e) Milk (a) French toast (e) Sirup (b) Grilled bacon (e) Bread (e) Butter (d) Coffee	(c) Cream of pea soup (e) Crackers (a) New England boiled dinner (pack in 2 wells) (e) Waldorf salad (e) Chocolate cookies (e) Butter (e) Bread (e) Butter (e) Lemonade	
FRIDAY	(e) Sliced peaches (e) Cornflakes (e) Milk (b) Scrambled eggs (e) Bread (e) Jelly (d) Coffee	(a) Cream of celery soup (e) Crackers (a) Breaded pork chop (a) Buttered green beans (a) Mashed potatoes (e) Tomato wedges (e) Apple sauce (e) Rolls (e) Butter (c) Tea	
SATURDAY	(e) Pineapple juice (a) Oatmeal (e) Milk (b) Grilled bacon (e) Coffee cake (e) Butter (d) Coffee	(a) Stewed chicken with noodles (a) Buttered beets (e) Celery sticks (e) Spice cake with icing (e) Bread (e) Jam (c) Hot chocolate	
SUNDAY	(e) Canned mixed fruit (e) Assorted dry cereal (e) Milk (a) Hashed browned potatoes (b) Fried eggs (e) Bread (e) Jam (d) Coffee	(a) Grilled beef steak (a) Macaroni au gratin (a) Buttered peas (e) Tossed vegetable salad (e) Cherry pie (e) Bread (e) Butter (e) Milk	

- (a)=Food to be packed in deep well.
 (b)=Food to be prepared on grill.
 (c)=Soup or beverage to be heated in hot cup.
 (d)=Beverage to be placed in coffee tank.
 (e)=Food to be carried in extra provisions box.

BILL OF FARE FOR FLIGHT RATIONS

Helmeo Unit—Serves approximately 12 men, 2 meals

The following menus are based on the use of precooked or partially cooked food

	BREAKFAST	DINNER	SUPPER
MONDAY		(c) Vegetable soup (e) Crackers (a) Fried chicken (a) Mashed potatoes (e) Pickled beets (e) Gingerbread (e) Bread (e) Butter (d) Coffee	(a) Grilled Vienna sausage (a) Buttered peas (e) Cottage cheese (e) Canned pears (e) Bread (e) Jam (c) Tea
TUESDAY		(a) Cream of pea soup (e) Crackers (a) Grilled beef steak (a) Mashed potatoes (e) Chilled canned tomatoes (e) Orange Bavarian (e) Butter (e) Bread (d) Coffee	(b) Grilled bacon (a) Spaghetti with tomato sauce (e) Apple, celery and carrot salad (e) Oatmeal cookies (e) Bread (e) Butter (c) Hot chocolate
WEDNESDAY		(a) Mulligatawny soup (e) Crackers (a) Baked ham (a) Green beans (e) Lettuce hearts (e) Dressing (e) Fresh fruit (e) Jam (e) Rolls (c) Tea	(e) Cold sliced meat and cheese (a) Hot potato salad (e) Carrot sticks (e) Chocolate square (e) Bread (e) Butter (e) Milk
THURSDAY		(e) Grape juice (a) Pot roast of beef with browned potatoes (a) Buttered carrots (e) Tossed green salad (e) Filled cookies (e) Butter (e) Bread (d) Coffee	(a) Baked macaroni and cheese (a) Buttered peas (e) Tomato slices (e) Apple pie (e) Butter (e) Bread (c) Hot chocolate
FRIDAY		(a) Cream of asparagus soup (e) Crackers (a) Lamb stew with vegetables (e) Pineapple and lettuce salad (e) Spice cake (e) Bread (e) Butter (d) Coffee (e) Mint jelly	(c) Bouillon (e) Crackers (a) Corned beef hash (a) Buttered baby limas (e) Olives (e) Celery (e) Orange (e) Cookie (e) Bread (e) Butter (e) Milk
SATURDAY		(c) Chicken soup (e) Crackers (a) Griddle broiled salisbury steak (a) Hashed browned potatoes (a) Harvard beets (e) Canned cherries (e) Bread (e) Butter (d) Coffee	(b) Ham and eggs (a) Green beans (e) Lettuce and tomatoes (e) Dressing (e) Fruit bars (e) Bread (e) Jam (c) Coffee
SUNDAY		(e) Tomato juice (a) Roast beef (a) Candied sweet potatoes (a) Buttered asparagus (e) Lettuce (e) Mayonnaise (e) Pound cake (e) Bread (e) Butter (e) Milk	(a) Beef chop suey (e) Peach and cottage cheese salad (e) Olives (e) Oatmeal cookies (e) Apple sauce (e) Bread (e) Butter (d) Coffee

- (a)=Food to be packed in deep well.
 (b)=Food to be prepared on grill.
 (c)=Soup or beverage to be heated in hot cup.
 (d)=Beverage to be placed in coffee tank.
 (e)=Food to be carried in provisions box.

BILL OF FARE FOR FLIGHT RATIONS

FTG-3 Unit—Serves 6 men, 1 meal

The following menus are based on the use of precooked food

	BREAKFAST	DINNER	SUPPER
MONDAY		(c) Tomato soup (a) Crackers (b) Braised beef (b) with vegetables (b) Buttered peas (b) Applesauce (a) Oatmeal cookies (a) Rolls (a) Butter (c) Coffee	
TUESDAY		(c) Consomme (a) Crackers (b) Baked ham (b) Mashed potatoes (b) Buttered green beans (b) Canned tomatoes (a) Marble cake with icing (a) Bread (a) Butter (c) Tea	
WEDNESDAY		(a) Tomato juice (b) Chicken fricassee with steamed rice (b) Buttered asparagus (b) Harvard beets (b) Chocolate steamed pudding (a) Bread (a) Jam (c) Coffee	
THURSDAY		(a) Pineapple juice (b) Grilled lamb chop (b) Buttered carrots (b) Buttered peas (b) Mashed potatoes (a) Yellow cake (a) Butter (a) Bread (c) Coffee	
FRIDAY		(c) Bouillon (a) Crackers (b) Beef and pork loaf (b) Buttered green beans (b) Hashed browned potatoes (b) Pickle relish (a) Sugar cookies (a) Bread (a) Butter (c) Tea	
SATURDAY		(a) Fruit cocktail (b) Corned beef hash (b) Candied sweet potatoes (b) Buttered peas (b) Buttered corn (a) Gingerbread (a) Bread (a) Butter (a) Coffee	
SUNDAY		(c) Beef broth (a) Crackers (b) Lamb stew (b) with dumplings (b) Buttered asparagus (b) Canned tomatoes (a) Canned peaches (a) Rolls (a) Jam (c) Tea	

(a)=Food to be packed in top drawer.

(b)=Food to be placed in trays.

(c)=Beverages and soups to be placed in beverage and soup containers.

BILL OF FARE FOR FLIGHT RATIONS

Aervoid—Insulated Food Carrier—Serves approximately 25 men, 1 meal

The following menus are based on the use of precooked food

	BREAKFAST	DINNER	SUPPER
MONDAY		(a) Vegetable soup (c) Crackers (b) Grilled beef tenderloin (b) Buttered frozen lima beans (b) Mashed potatoes (c) Canned pineapple (c) Chocolate cake (c) Bread (c) Butter (d) Coffee	
TUESDAY		(b) Tomato soup (c) Crackers (a) Beef stew (b) Buttered green beans (b) Buttered carrots (c) Peach upside down cake (c) Bread (c) Butter (c) Jam (d) Coffee	
WEDNESDAY		(a) Chicken broth (c) Crackers (b) Ham and pork loaf (b) Candied sweet potatoes (b) Buttered cauliflower (c) Canned apricots (c) Oatmeal cookies (c) Bread (c) Butter (d) Tea	
THURSDAY		(a) Cream of celery soup (c) Crackers (b) Roast beef (b) Buttered asparagus (b) Browned potatoes (c) Pickle relish (c) Jelly roll (c) Bread (c) Butter (d) Coffee	
FRIDAY		(a) Chicken and noodles (b) Mashed potatoes (b) Buttered peas (b) Whole grain corn (c) Cherry pie (c) Bread (c) Butter (d) Coffee	
SATURDAY		(b) Cream of mushroom soup (c) Crackers (a) Beef chop suey (b) Rice (b) Harvard beets (c) Marble cake, iced (c) Bread (c) Jam (d) Tea	
SUNDAY		(a) Bean soup (c) Crackers (b) Roast pork (b) Baked potatoes (b) Buttered green beans (c) Applesauce (c) Cookies (c) Bread (c) Butter (d) Coffee	

- (a)=Food to be packed in the 2 gallon container.
 (b)=Food to be packed in the 1 gallon containers. (3 in number.)
 (c)=Food to be packed in provisions box.
 (d)=Beverage to be placed in thermos bottle.

BILL OF FARE FOR FLIGHT RATIONS

SANDWICH MEALS

	BREAKFAST	DINNER	SUPPER
MONDAY		Tomato soup—Crackers *Pimiento cheese sandwiches Peanut butter sandwiches Celery Cookies Canned peaches Coffee	
TUESDAY		Grape juice—Crackers Canned ham spread sandwiches Jelly sandwiches Carrot strips Chocolate cake Orange Coffee	
WEDNESDAY		Chicken soup—Crackers Canned roast beef sandwiches Bread and butter sandwiches Sweet pickles Gingerbread Banana Coffee	
THURSDAY		Vegetable soup—Crackers Luncheon meat sandwiches Sandwich spread sandwiches Tomato wedges Canned pears Candy Coffee	
FRIDAY		Tomato juice—Melba toast Sardine sandwiches American cheese sandwiches Olives Filled cookies Apple Hot chocolate	
SATURDAY		Pineapple juice—Crackers Cold fried chicken Cream cheese and olive sandwiches Bread and butter sandwiches Pound cake Canned cherries Coffee	
SUNDAY		Cream of mushroom soup—Crackers Peanut butter sandwiches Canned corned beef sandwiches Celery Cinnamon rolls Orange Hot chocolate	

*Sandwich ingredients are sent aloft for the preparation of sandwiches in flight.

FLIGHT RATION MENUS

(Using Maxson Sky Plates)

The following menus are composed of precooked frozen foods which are supplemented by breads, soups, beverages or desserts

BREAKFASTS	
<p style="text-align: center;">Menu No. 7</p> <p>(a) Scrambled eggs with ham (a) Applesauce (a) Roll (c) Coffee</p>	<p style="text-align: center;">Menu No. 10</p> <p>(a) Broiled ham (a) French toast (a) Stewed prunes (c) Hot chocolate</p>
DINNERS	
<p style="text-align: center;">Menu No. 1</p> <p>(a) Grilled steak (a) Green beans (a) French fried potatoes (b) Bread (b) Butter (b) Chocolate cookies (c) Coffee</p>	<p style="text-align: center;">Menu No. 2</p> <p>(a) Veal stew (a) Beets Julienne (a) Bread roll (b) Jam (b) Canned peaches (b) Sugar cookies (c) Hot tea</p>
<p style="text-align: center;">Menu No. 3</p> <p>(a) Luncheon loaf (a) Candied sweet potatoes (a) Spinach (b) Bread (b) Butter (b) Apricot upside down cake (c) Coffee</p>	<p style="text-align: center;">Menu No. 4</p> <p>(a) Beef stew (a) Asparagus (a) Bread roll (b) Jam (b) Spice cake (b) Canned plums (c) Coffee</p>
<p style="text-align: center;">Menu No. 5</p> <p>(a) Breaded veal cutlet (a) Fried potatoes (a) Lima beans (b) Bread (b) Butter (b) Orange (c) Hot tea</p>	<p style="text-align: center;">Menu No. 6</p> <p>(a) Hamburger (a) Green beans (a) French fried potatoes (b) Rolls (b) Catsup (b) Cherry pie (c) Coffee</p>
<p style="text-align: center;">Menu No. 8</p> <p>(a) Baked ham and pineapple (a) Candied sweet potatoes (a) Spinach (b) Bread (b) Butter (b) Sugar cookies (c) Coffee</p>	<p style="text-align: center;">Menu No. 9</p> <p>(a) Roast lamb with mint sauce (a) Peas (b) Rolls (b) Butter (a) Bread pudding with raisins (c) Hot tea</p>
<p style="text-align: center;">Menu No. 11</p> <p>(a) Swiss steak and gravy (a) Lima beans (a) Applesauce (b) Bread (b) Butter (b) Oatmeal cookies (c) Coffee</p>	<p style="text-align: center;">Menu No. 12</p> <p>(a) Frankfurters (a) Hot potato salad (b) Rolls (b) Catsup (a) Apricots (b) Chocolate cake (c) Coffee</p>

- (a) = Precooked food frozen on paper plates to be packed in insulated box.
 (b) = Food to be packed in provisions box.
 (c) = Beverage to be carried in thermos jug or prepared in hot cup.

NOTE:

The precooked frozen foods listed in each menu are frozen on paper plates in the combinations given. This standardizes the 12 menus. Other meals are in the developmental stage and will be available from time to time in the future.
 The supplemental foods suggested (those marked (b) or (c)) will be supplied from the general mess or flight ration galley. Different selections of these foods may be used.

FLIGHT RATION MENUS **EACH MENU SERVES APPROXIMATELY 6 MEN**

The following menus are based on the use of canned products and are prepared in flight, using hot plates or grills, and hot cup

BREAKFASTS

	Size, oz.	Quantity		Size, oz.	Quantity
Plums.....	18	2	Pineapple juice.....	18	2
Bacon, sliced, pasteurized.....	24	1	Corned beef hash.....	16	2
Bread.....	16	1	Bread.....	16	1
Marmalade.....	7	1	Jam.....	7	1
Coffee.....	4	1	Cocoa.....	1½	6
Milk, evaporated.....	14½	1			

DINNERS

Vegetable soup.....	10	3	Cream of asparagus soup.....	10	3
Crackers.....	16	1	Crackers.....	16	1
Meat, ground, and spaghetti.....	12	3	Ham with candied sweet potatoes.....	34	1
Green beans.....	28	1	Canned tomatoes.....	26	1
Bread.....	16	1	Bread.....	16	1
Jelly.....	7	1	Butter.....	16	¼
Peaches, sliced.....	30	2	Chocolate bar.....	2	6
Cocoa.....	1½	6	Coffee.....	4	1
			Milk, evaporated.....	14½	1
Pineapple juice.....	18	2	Consomme.....	10	3
Buttered wafers.....	16	1	Crackers.....	16	1
Chicken and vegetables.....	12	3	Roast beef and gravy.....	30	1
Potatoes.....	20	1	Potatoes.....	20	1
Bread.....	16	1	Olives.....	5	1
Butter.....	16	¼	Bread.....	16	1
Cookies, assorted.....	16	1	Jam.....	7	1
Coffee.....	4	1	Apricot halves.....	32	1
Milk, evaporated.....	14½	1	Tea.....	1	1
			Milk, evaporated.....	14½	1

SUPPERS

Cream of mushroom soup.....	10	3	Tomato juice.....	18	2
Crackers.....	16	1	Beef and vegetables.....	30	1
Ham chunks.....	30	1	Corn.....	20	1
Peas.....	20	1	Brown bread.....	16	2
Bread.....	16	1	Butter.....	16	¼
Jam.....	7	1	Pears.....	32	1
Fruit cocktail.....	32	1	Coffee.....	4	1
Cocoa.....	1½	6	Milk, evaporated.....	14½	1

NOTE:

Biscuit and preserved butter may be substituted for bread and butter if they are not available.
These menus are intended to be sample menus only. They are not to be considered comprehensive nor to include all items authorized as flight ration components.

AIRCRAFT EMERGENCY RATION

This ration is not designed for use in in-flight feeding. It is issued for use in cases of emergency only when it is necessary to abandon ship.

The emergency flight ration consists of 2 types of candy tablets, malted milk tablets, chewing gum, and multivitamin tablets.

The exact contents are as follows:

- 5 sucrose-citric acid tablets
- 10 sucrose-lipid citric acid tablets
- 8 sucrose malted milk tablets
- 2 multivitamin tablets
- 2 chewing gum tablets

FOOD PREPARATION

In flight as well as on the ground, food is an important factor in maintaining the morale of men. For this reason care must be exercised in the preparation of food in the flight ration or general mess galleys. The ship's cook can build the morale of the flight crews by preparing nourishing, attractive, and palatable meals.

The preparation of food for flight messing requires the consideration of certain problems which are peculiar to this type feeding.

SUGGESTIONS

Meats

Bone and trim all meats well, whether cooked or uncooked, before packing for flight rations.

Remove all gristle and bone from stew meat.

Cut meat, which is to be cooked in flight, into pieces of uniform size and thickness. This will insure a uniform degree of doneness in the cooked meat.

Braise meats for serving in flight. This is the most satisfactory method of preparation. Since braised meats are prepared in the presence of moisture, the texture and color are not affected by the steam which is created in the tightly lidded food pans in which the meats are packed for holding.

Broil or grill meats for holding in warming unit only if the meat is served soon after the take-off. If held a long time, moisture in the tightly covered food pans changes the flavor and texture of broiled meats to that of braised meats.

Hold roasted meats no longer than 2 hours. For meals held longer than 2 hours, a roast needs to be sliced while still very rare in order to avoid having an overcooked product at serving time. This procedure causes the loss of a great amount of the juices, flavor and color of the meat.

Serve canned meat products in place of roasted fresh meat. Use Beef, roast, canned, Beef and gravy, canned, and Swiss steak and gravy, canned.

Use chopped meat dishes on in-flight menus only if the meat is a canned product or has been pre-cooked and frozen.

Cook meat to the same degree of doneness as if the meat were to be served immediately, if it is to be packed in an insulated container which is *not* electrically heated.

Cook meat only to a partial degree of doneness if it is to be packed in electrically heated units and held hot until serving time. The heat in the unit is sufficient to finish cooking the meat during the holding period.

See Time-Table for Braising Meat, and Time-

Table for Broiling Meat in the Navy Cook Book. For partially cooking meats reduce recommended cooking time according to the following table for Partial Cooking Time for Fresh Meats.

PARTIAL COOKING TIME FOR FRESH MEATS

Holding period in warming unit <i>Hours</i>	Reduce cooking time <i>Approximately</i>
2	$\frac{1}{4}$
4	$\frac{1}{2}$
6 or more	$\frac{3}{4}$

Vegetables

Wash raw vegetables thoroughly before packing. Most aircraft do not have sufficient water supply to permit cleaning of vegetables aboard.

Cook, completely, fresh vegetables which are to be packed in an insulated food carrier which does *not* have an electrical heating element.

Pack cooked vegetables as hot as possible.

Partially cook fresh vegetables that are to be packed in warming units for 2 hours or longer. See Time-Table for Cooking Fresh Vegetables in the Navy Cook Book. To partially cook fresh vegetables, reduce recommended cooking time according to table for Partial Cooking Time for Fresh Vegetables.

PARTIAL COOKING TIME FOR FRESH VEGETABLES

Holding period in warming unit <i>Hours</i>	Reduce cooking time <i>Approximately</i>
2	$\frac{1}{4}$
4	$\frac{1}{2}$
6 or more	$\frac{3}{4}$

See Fresh Vegetable Cooking Chart, page 29, for directions to partially cook vegetables in Flex-Seal pressure cooker. Directions for using the Flex-Seal pressure cooker are given on page 8.

Heat canned vegetables quickly just before packing, or place, unheated, into deep wells of warming units if to be held 6 hours or longer. See instructions for heating canned vegetables, page 29.

Salads

Pack salads in a single large container or as individual salads. Salads made of combinations of fruits or vegetables, such as tossed lettuce and tomato;

Waldorf, carrot and celery, grapefruit and orange, carrot and raisin and grapefruit and celery, pack and hold well in a single container. Gelatin and other individually formed salads require packing in individual containers like paper cups. A minimum of this type salad should be served, since it requires additional space and equipment.

Add dressing to salads just before serving. Pack and carry salad dressings in small jars or paper containers.

Drain canned fruits well, when used for salads.

Place cut apples or bananas in a solution of lemon juice and a small amount of water to prevent discoloration. Other acid fruit juices such as grapefruit, orange or pineapple, or lemon juice powder, synthetic, may be used in place of lemon juice. Toss the fruit in the solution to completely cover the cut pieces. Drain well.

Wrap raw vegetables, such as carrot strips, celery pieces and lettuce in waxed paper to prevent drying.

Soups

Heat soups to boiling temperature before packing in insulated containers for delivery aboard aircraft.

Soup may be placed in containers of warming unit to heat. In many cases, canned soups may be sent aloft to be heated aboard the aircraft.

Breads

Wrap breads well to prevent drying.

Use several kinds of breads to add variety to the menu.

Carry hot breads in the deep wells of warming unit or in vacuum food carrier, when space is available.

Desserts

Serve cookies and cake frequently. These desserts pack well and can be carried easily.

Carry pies whole. Cut into portions just before serving.

Pack gelatin desserts and puddings in individual paper containers or in a single large container.

Do not serve soft desserts such as custards, soft pies, cream puffs and custard puddings in flight. These desserts are difficult to carry and are readily susceptible to contamination under long holding

periods imposed by flight conditions.

Fruits

Serve fruit frequently. Serve fruit at the beginning of a meal, as a dessert, or as a between-meal snack.

Pack canned fruits and fruit juices in a supplementary provisions box.

Wash thoroughly before packing all fresh fruit which is eaten with the peel or skin on.

Chill fruits, if possible, to make them more acceptable. This is especially necessary in tropical climates.

Beverages

Prepare tea, coffee, and hot chocolate in aircraft when practicable. Heat water for making beverages in hot cup, percolator or pressure cooker.

Pack beverages in thermos bottles, if equipment is not provided nor time allowed for preparation aboard. Beverages may be packed in food pans of warming units or food carriers, if necessary.

Pack cold fruit drinks in thermos bottles or carry canned juices.

Carry milk packed in paper containers if this type package is available. Paper containers are light in weight and can be disposed of after use.

Sandwiches

See Navy Cook Book for suggestions for making sandwiches.

Pack ingredients to send aloft so that sandwiches can be made just prior to serving.

Prepare sandwiches in ground galley *only* if they are to be eaten soon after take-off. Wrap sandwiches securely in wax paper to prevent drying.

Do not serve fillings such as egg salad, ham salad, chopped meat or chopped chicken. These fillings are susceptible to contamination by spoilage bacteria and as such are potential sources of food poisoning.

Cereals

Pack cooked cereals in food pans of insulated container or warming unit to keep hot for serving in flight. Stow packaged dry, prepared cereals in a supplementary provisions box.

Serve cereals often at breakfast and use as a between-meal snack.

FRESH VEGETABLE COOKING CHART

(Using Flex-Seal Pressure cooker)

(Figures given in table are suggested times IN MINUTES for precooking food before packing in warming unit)

	Estimated holding period IN HOURS between packing of food in warming unit and serving							
	1	2	3	4	5	6	7	8
Asparagus:								
tips.....	1½	(1)	(1)	(1)	(1)	(1)	(1)	(1)
stalks.....	1	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Beans, green.....	2½	1½	1	(1)	(1)	(1)	(1)	(1)
Beans, lima.....	1	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Beets, whole.....	15	13	10	8	6	4	2	(1)
Broccoli.....	1½	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Carrots:								
whole.....	4	4	3	3	2	1	(1)	(1)
sliced.....	2	2	2	1	1	1	(1)	(1)
Cauliflower (pcs.).....	1½	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Celery.....	2	2	2	1	1	1	(1)	(1)
Corn on cob.....	5	4	3	2	1	(1)	(1)	(1)
Onions, whole.....	8	7	6	5	4	3	2	1
Parsnips.....	10	10	9	9	8	7	6	4
Peas.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Potatoes, sweet, halved.....	8	8	8	7	7	6	6	5
Potatoes, white, halved.....	8	8	8	6	4	3	2	2
Rutabagas.....	15	15	15	15	15	10	10	10
Squash, Hubbard.....	15	15	15	12	12	10	10	10
Squash, summer ..	2	2	2	2	1	1	1	1
Turnips, white, cubed.....	10	10	10	7	5	5	5	3

(1) Bring to pressure. Then set cooker in cold water to reduce pressure quickly.

Note:

Cooking times are given for the amount of vegetables that can be placed loosely in either 2 or 4-quart cookers.
Use ¼ cup of water for 2-quart cooker.
Use ½ cup of water for 4-quart cooker.
The cooker is designed to maintain 15 pounds pressure during the cooking period.

The Time-Table for Heating Canned Vegetables shows the number of minutes canned vegetables should be heated in relation to the number of hours the vegetable will be held in a warming unit before serving.

TIME-TABLE FOR HEATING CANNED VEGETABLES

Times listed below are for 1 No. 10 can or 4 No. 2 cans.

(Figures in each column designate heating period in minutes prior to packing)

Vegetables, canned	Period between packing of food in warm- ing unit and serving (in hours)							
	1	2	3	4	5	6	7	8
Asparagus.....	7	7	5	3	2	(1)	(1)	(1)
Beans, green.....	10	10	7	5	2	(1)	(1)	(1)
Beets.....	10	10	7	5	2	(1)	(1)	(1)
Carrots.....	10	10	7	5	2	(1)	(1)	(1)
Corn.....	10	10	7	5	2	(1)	(1)	(1)
Peas.....	10	10	7	5	2	(1)	(1)	(1)
Potatoes, sweet.....	7	5	4	3	2	(1)	(1)	(1)
Spinach.....	10	10	7	5	2	(1)	(1)	(1)
Tomatoes.....	10	10	7	5	2	(1)	(1)	(1)

(1) In order to prevent overcooking of canned vegetables on long flights' place the vegetables in the deep wells of the warming unit without previously heating them. (Place in deep wells cold.) Do not open the cans of vegetables and empty contents into the deep wells until just prior to the unit being closed and delivered to the plane.

SANITARY ASPECTS OF FLIGHT FEEDING

The contamination of food by bacteria which cause food poisoning is more likely to occur under conditions of flight feeding than under general mess conditions. These bacteria grow and multiply rapidly in a favorable growth period of 5 hours or more, during which time the temperatures range from 65° F. to 115° F.

Not more than 4 hours should elapse between the end of the cooking period of a food and the service of it. If food is to be held longer than 4 hours after cooking, the food should be rapidly and thoroughly chilled to a temperature of 50° F. or lower, or held constantly at a temperature of 130° F. or higher.

Since food prepared for service in flight often is held longer than 4 hours, it must be held at a temperature of 50° F. or lower or at 130° F. or higher. Precooked and partially cooked food should be prepared and packed hot just before the time of delivery to the plane.

When prepared food is held in a ground galley pending delivery to the plane, the warming unit in which it is packed must be plugged into an electrical outlet to maintain the necessary temperature for holding the food. The warming units used for flight feeding are thermostatically controlled to maintain a temperature above the 130° F. temperature required for holding food for a long period of time.

To guard against any possible contamination during the process of preparation, the food must be handled under sanitary conditions. Ground galleys and cooking utensils and airborne galley equipment and warming units must be kept scrupulously clean.

It is essential to return all mess gear and equipment used in packing food for flight or preparing and serving food in flight to the ground galley for proper washing, cleaning and sterilization. This equipment must be thoroughly washed in water heated to a temperature of 120° F. to 140° F., then

rinsed with water at a temperature of 180° F. or higher and placed upside down on an open rack to air dry. Care must be taken when washing warming units not to immerse those units in which heating elements are installed. Water will damage the elements.

Cabinets or other galley equipment installed in the plane need to be cleaned regularly after each flight for sanitary reasons as well as to eliminate the possible development of unpleasant odors from any food which may have been spilled. These odors often aggravate air sickness in susceptible personnel.

As further precaution against food contamination, foods which are most susceptible to the growth of bacteria responsible for food poisoning can be eliminated from the menu. These foods are cream soups, creamed meats, fish, or vegetables, chopped cooked meat, beef hash, tongue, and egg for sandwich fillings, cream fillings, custard filled puffs and eclairs, and bread puddings.

Chopped fresh meat dishes should not be served unless suitable storage conditions are available. Canned meat items or precooked frozen meat items can be used in place of the chopped fresh meat.

Bread puddings and desserts prepared with cream filling or custard should be eliminated from the flight menu.

Sandwich ingredients should be sent aloft in the original sterile containers in which they are packed and the sandwiches prepared just before serving.

Immediately following the landing of the aircraft, all leftover food should be returned to the ground galley and disposed of. Food allowed to remain in the plane will become contaminated. It should be removed to prevent its being consumed by members of the working crews to protect them from possible food poisoning.

PROCUREMENT AND ISSUE OF FLIGHT RATIONS

The procurement of flight rations is authorized in the Supplies and Accounts Memoranda, art. 1320-8, Procurement and Components. Subparagraph (e) of this article, pertinent to the procurement and issue of flight rations, is quoted here: "Any supply officer is authorized to obtain the items specified in subparagraph. (d) to be issued as flight rations by transfer on invoice from other supply officers having stock available, by order under provision, ship's store, or commissary store contracts, or by open purchase when no other source of supply is available. Supply officers of naval air stations and large seaplane tenders (AV) are authorized to procure and carry such items in stock. Small seaplane tenders (AVP) may obtain such items in quantities required to meet emergency issues or cruising needs; any stock maintained ordinarily will not exceed two weeks estimated requirements. Other supply officers are authorized to procure such items in such quantities as may be required for immediate issue when none of the above-mentioned sources of supply is available for issuance of flight rations to plane crews."

Issue

In the issue of flight rations, care must be taken to see that each issue is properly authorized and is made to those entitled to receive flight rations. Supplies and Accounts Memoranda, art. 1320-8, Procurement and Components, subparagraph. (g), states:

"Flight rations may be issued in the form of prepared meals, box lunches, or ration components.

(1) In no case will the value of provisions issued exceed \$1.20 per flight ration. The value of provisions comprising individual meals will not exceed 30 cents for breakfast, 50 cents for dinner, and 40 cents for supper.

(2) Flight rations will be issued only on the written authority of the squadron commander, or

in his absence or by his direction, by any subordinate flight commander, air transport officer, or squadron transportation officer.

(3) When flight rations are required, the squadron commander, or in his absence, or by his direction, any subordinate flight commander, air transport officer, or squadron transportation officer, will notify the supply (commissary) officer sufficiently in advance of the time of departure of the plane, of the number of flight rations or meals required for the crew and passengers of the plane concerned. The request and authorization for issue of flight rations will contain the following information:

Plane or trip number

Time order was placed

Time flight rations are required

Number of rations or meals required (one ration is three meals)

If prepared meals, box lunches, or ration components are required.

(4) A receipt for flight rations issued will be obtained on the same form on which rations are authorized and requested. The receipt for flight rations will be retained in the supply (commissary) files."

A sample form of authorization is shown at the end of this section.

Unused provisions

Quoting from Supplies and Accounts Memoranda, art. 1320-8, Procurement and Components, subparagraph. (i), "Any unused flight ration components remaining on hand at the end of the journey will be delivered to the local supply officer. The supply officer will take up such provisions as a receipt from Title V, account 49, appropriation, Pay, Subsistence, and Transportation, Navy, in the usual manner."

SAMPLE

From: Commanding Officer, Patrol Squadron

To: Supply Officer.....

SUBJECT: Flight Rations; request for issue of

References: Bureau of Supplies and Accounts Memoranda, art. 1320-8

1. It is requested that flight rations be issued as indicated below, in accordance with the authority contained in reference.

(a) For.....officers and enlisted men engaged in flight operations.

(b) Number of meals to be furnished for each person.....

(c) Total number of meals to be furnished.....

(d) Type of rations that will be required are.....
prepared meals,

.....
box lunches, or ration components. (Indicate which one)

2. These rations were ordered at.....
(time) (date)

and will be required at.....
(time) (date)

3. I certify that no part of an aircraft flight ration will be furnished without cost to any person in a travel or per diem status.

.....
Commanding Officer

Patrol Squadron.....

1ST ENDORSEMENT Received.....flight ration meals

.....
Signature of person authorized receiving rations from Supply Officer.

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